

REQUEST
FOR
CONTINUED EXAMINATION (RCE)
TRANSMITTAL

MAIL STOP RCE

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Subsection (b) of 35 U.S.C. § 132, effective on May 29, 2000,
provides for continued examination of an utility or
plant application filed on or after June 8, 1995

| | |
|----------------------|----------------|
| Application Number | 09/822,838 |
| Confirmation Number | 8476 |
| Filing Date | April 02, 2001 |
| First Named Inventor | Hyun-doo SHIN |
| Group Art Unit | 2623 |
| Examiner Name | Brian Q. Le |
| Matter Number | Q59546 |

| | |
|-------|---|
| Title | METHOD OF DESCRIBING PATTERN REPETITIVENESS OF IMAGE |
|-------|---|

This is a Request for Continued Examination (RCE) under 37 C.F.R. § 1.114 of the above-identified application.

1. SUBMISSION REQUIRED UNDER 37 C.F.R. § 1.114

- a. ☒ Previously submitted
- i. ☒ Please enter and consider the amendment(s)/reply under 37 C.F.R. § 1.116
previously filed on February 3, 2005
- ii. ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____
- iii. ☐ Other _____
- b. ☒ Enclosed
- i. ☒ Amendment/Reply
- ii. ☐ Affidavit(s)/Declaration(s)
- iii. ☐ Information Disclosure Statements (IDS)
- iv. ☐ Petition for Extension of Time
- v. ☐ Other _____

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2. MISCELLANEOUS

- a. ☐ Suspension of action on the above-identified application is requested under 37 C.F.R. § 1.103(c) for a
period of _____ months
- b. ☐ Other _____

3. FEES

A check for the RCE statutory fee of \$790.00 is attached. The USPTO is directed and authorized to charge all
required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any
overpayments to said Deposit Account. A duplicate copy of this transmittal letter is attached.

CORRESPONDENCE ADDRESS

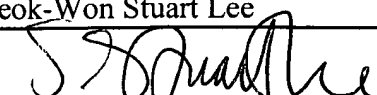
Direct all correspondence to the address for SUGHRUE MION, PLLC filed under the Customer Number listed below:

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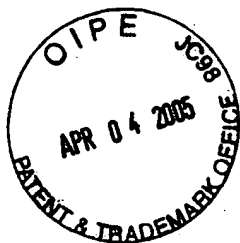
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CUSTOMER NUMBER

SIGNATURE OF ATTORNEY

| | | | |
|-----------|--|------------------|----------------------------|
| Name | <u>Seok-Won Stuart Lee</u> | Registration No. | <u>37 C.F.R. § 11.9(b)</u> |
| Signature | <u></u> | Date | <u>April 4, 2005</u> |

Granted limited recognition under



PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Docket No: Q59546

Hyun-doo SHIN , et al.

Appln. No.: 09/822,838

Confirmation No.: 8476

Group Art Unit: 2623

Filed: April 02, 2001

Examiner: Brian Q. Le

For: METHOD OF DESCRIBING PATTERN REPETITIVENESS OF IMAGE

AMENDMENT UNDER 37 C.F.R. § 1.114(c)

MAIL STOP RCE

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Sir:

In response to the Office Action dated March 1, 2005, please amend the above-identified application as follows on the accompanying pages.

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AMENDMENTS TO THE SPECIFICATION

Please replace the second full paragraph of page 3 with the following:

Accordingly, to achieve the above objectives, there is provided a pattern repetitiveness describing method of an image according to an aspect of the present invention including: (a) projecting an image on a predetermined axis having a predetermined direction; (b) decomposing the projected image down one level; (c) increasing a threshold value ~~while~~ if a pattern quantizing value is retained, and denoising the decomposed data; and (d) describing pattern repetitiveness of an image using the pattern quantizing value of the denoised data and the threshold value used for denoising.

Please replace the second full paragraph of page 4 with the following:

To achieve the above objectives, there is provided a pattern repetitiveness describing method of an image according to another aspect of the present invention including: (a) projecting an image on a predetermined axis having a predetermined direction; (b) decomposing the projected image ~~while~~ if the level in which a previous pattern quantizing value and a pattern quantizing value after the decomposition are retained as they are, and denoising; and (c) describing pattern repetitiveness of an image using either the pattern quantizing value of the data from which at least a level number and noise are removed, and the threshold value used for denoising.

Please replace the paragraph bridging pages 4 and 5 with the following:

To achieve another objective, there is provided a method for grouping images having similar texture characteristics within an image database in which a plurality of images are stored, according to one aspect of the present invention, the method including: (a) projecting an image

on a predetermined axis having a predetermined direction; (b) decomposing the projected data down one level; (c) increasing a threshold value ~~while~~if a pattern quantizing value is retained, and denoising the decomposed data; (d) determining pattern repetitiveness vectors having a pattern quantizing value of the denoised data and a threshold value used for denoising as pattern repetitiveness descriptors of images; and (e) grouping images having similar texture characteristics using the pattern repetitiveness descriptor of the image.

Please replace the first full paragraph on page 5 with the following:

To achieve the above objectives, there is provided a method for grouping images according to another aspect of the present invention, wherein a method for grouping images having similar texture characteristics within an image database in which a plurality of images are stored includes: (a) projecting an image on a predetermined axis having a predetermined direction; (b) denoising by decomposing the image ~~while~~if the level at which a previous pattern quantizing value and a pattern quantizing value after the decomposition are retained; (c) determining the level number of the denoised data, the pattern quantizing value, and the threshold value used for denoising as a pattern repetitiveness descriptor of the image; and (e) grouping images having similar texture characteristics using the pattern repetitiveness descriptor of the image.

Please replace the first full paragraph of page 11 with the following:

Therefore, if the previous pattern quantizing value is identical to the pattern quantizing value after the decomposition, step 206 is performed, so that the result data is decomposed down one level, and the pattern quantizing value of the decomposed data is calculated (step 208), to determine whether the previous pattern quantizing value is identical to the pattern quantizing

value after the decomposition (step 210). However, if the previous pattern quantizing value is not identical to the pattern quantizing value after the decomposition, a previous level is determined as a final level (step 212). Hereby, the decomposition is performed ~~while~~if the level at which the previous pattern quantizing value and the pattern quantizing value after the decomposition are retained as they are.

Please replace the paragraph bridging pages 11 and 12 with the following:

If it is determined that the previous pattern quantizing value is not identical to the current pattern quantizing value, the previous pattern quantizing value is determined as the final pattern quantizing value (step 222). If it is determined that the previous pattern quantizing value is identical to the current pattern quantizing value, the threshold value is increased (step 220), and steps 214, 216, and 218 are repeatedly performed, so that the image is denoised ~~while~~if the threshold at which the current pattern quantizing value and the previous pattern quantizing value are retained as they are. Now, the pattern repetitiveness of the image will be described on the basis of the level number, pattern quantizing value, and the threshold value (step 224).

Please replace the paragraph bridging pages 12 and 13 with the following:

According to the method of grouping images, as described in the method of describing pattern repetitiveness of an image according to the first preferred embodiment of the present invention, the threshold value is increased ~~while~~if the pattern quantizing value is retained, and the decomposed data is denoised. The pattern repetitiveness vectors including the pattern quantizing value of the denoised data and the threshold value used for denoising are designated as pattern repetitiveness descriptors of the images. It is possible to group images having similar texture characteristics using the pattern repetitiveness descriptor of the image.

AMENDMENT UNDER 37 C.F.R. § 1.114(c)
U.S. Appln. No.: 09/822,838

Please replace the first full paragraph on page 13 with the following:

Also, according to the method of grouping images, as described in the method of describing pattern repetitiveness of an image according to the second preferred embodiment of the present invention, the decomposition is performed ~~while~~if the level at which the previous pattern quantizing value and the pattern quantizing value after the decomposition are retained as they are, so that the image is denoised, and the level number of the denoised data, the pattern quantizing value, and the threshold value used for denoising are determined as the pattern repetitiveness descriptor of the image. It is possible to group images having similar texture characteristics using the pattern repetitiveness descriptor of the image.

AMENDMENT UNDER 37 C.F.R. § 1.114(c)
U.S. Appl. No.: 09/822,838

AMENDMENT TO THE DISCLOSURE

Please delete the present Abstract of the Disclosure and replace it with the following new Abstract of the Disclosure.

A method for describing pattern repetitiveness which may exist within an image, is provided. The method of describing pattern repetitiveness of an image comprises: (a) projecting an image on a predetermined axis having a predetermined direction, (b) decomposing the projected image down one level, (c) increasing a threshold value if a pattern quantizing value is retained, and denoising the decomposed data, and (d) describing pattern repetitiveness of the image using the pattern quantizing value of the denoised data and the threshold value used for denoising. Because the method of describing pattern repetitiveness of an image effectively denoises the original image without damaging the pattern repetitiveness of the original image, and the pattern repetitiveness is described using the denoised data, it is possible to describe more definite pattern repetitiveness.

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (Currently Amended): A method of describing pattern repetitiveness of an image comprising the steps of:

- (a) projecting an image on a predetermined axis having a predetermined direction;
- (b) decomposing the projected image down one level;
- (c) increasing a threshold value ~~while~~ if a pattern quantizing value is retained, and denoising the decomposed data; and
- (d) describing pattern repetitiveness of the image using the pattern quantizing value of the denoised data and the threshold value used for denoising.

2. (Original): The method of claim 1, wherein the decomposition is based on a discrete wavelet transform.

3. (Original): The method of claim 1, wherein step (c) comprises the steps of:

- (c-1) calculating the pattern quantizing value of the projected image;
- (c-2) decomposing the projected image down one level;
- (c-3) denoising the decomposed result data using a predetermined threshold value;
- (c-4) calculating the pattern quantizing value of the denoised data;
- (c-5) discriminating whether a current pattern quantizing value is identical to a previous pattern quantizing value;

(c-6) increasing the threshold value if the current pattern quantizing value is identical to the previous pattern quantizing value, and returning to step (c-3); and

(c-7) determining the previous pattern quantizing value as a final pattern quantizing value if the current pattern quantizing value is not identical to the previous pattern quantizing value.

4. (Original): The method of claim 3, wherein step (d) comprises:

(d') describing the pattern repetitiveness of the image on the basis of the pattern quantizing value determined in the step (c-7) and the threshold value.

5. (Currently Amended): A pattern repetitiveness describing method of an image comprising the steps of:

(a) projecting an image on a predetermined axis having a predetermined direction;

(b) decomposing the image ~~while~~ if the level at which a previous pattern quantizing value and a pattern quantizing value after the decomposition are retained as they are, and denoising; and

(c) describing the pattern repetitiveness of the image using one of the pattern quantizing value of the data from which at least level number and noise are removed, and the threshold value used for denoising.

6. (Original): The method of claim 5, wherein the decomposition is based on a discrete wavelet transform.

7. (Original): The method of claim 5, wherein step (b) comprises the steps of:

(b-1) calculating the pattern quantizing value of the projected image;

- (b-2) decomposing the projected image down one level;
- (b-3) calculating the quantizing value of the decomposed result data;
- (b-4) determining whether the previous pattern quantizing value is identical to the pattern quantizing value after the decomposition;
- (b-5) if the previous pattern quantizing value is identical to the pattern quantizing value after the decomposition, returning to step (b-2); and
- (b-6) if the previous pattern quantizing value is not identical to the pattern quantizing value after the decomposition, determining a previous level as a final level.

8. (Original): The method of claim 7, wherein the pattern repetitiveness describing method of the image further comprises the steps of:

- (b-7) denoising data of the level determined in the step (b-6) using the predetermined threshold value;
- (b-8) calculating the pattern quantizing value of the denoised data;
- (b-9) determining whether the current pattern quantizing value is identical to the previous pattern quantizing value;
- (b-10) if the current pattern quantizing value is identical to the previous pattern quantizing value, increasing the threshold value, and returning to step (b-7); and
- (b-11) if the current pattern quantizing value is not identical to the previous pattern quantizing value, determining the previous pattern quantizing value as a final pattern quantizing value.

AMENDMENT UNDER 37 C.F.R. § 1.114(c)
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9. (Currently Amended): A method of grouping images having similar texture characteristics within an image database in which a plurality of images are stored, the method comprising the steps of:

- (a) projecting an image on a predetermined axis having a predetermined direction;
- (b) decomposing the projected image down one level;
- (c) increasing a threshold value ~~while~~ if a pattern quantizing value is retained, and denoising the decomposed data;
- (d) determining pattern repetitiveness vectors including the pattern quantizing value of the denoised data and the threshold value used for denoising as pattern repetitiveness descriptors of images; and
- (e) grouping images having similar texture characteristics using the pattern repetitiveness descriptors of the images.

10. (Currently Amended): A method of grouping images having similar texture characteristics within an image database in which a plurality of images are stored, the method comprising the steps of:

- (a) projecting an image on a predetermined axis having a predetermined direction;
- (b) decomposing the image ~~while~~ if the level at which a previous pattern quantizing value and a pattern quantizing value after the decomposition are retained as they are, and denoising;
- (c) determining a level number of the denoised data, a pattern quantizing value, and a threshold value used for denoising as pattern repetitiveness descriptors of the image; and
- (e) grouping images having similar texture features using the pattern repetitiveness descriptors of the images.

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AMENDMENT UNDER 37 C.F.R. § 1.114(c)
U.S. Appln. No.: 09/822,838

11. (Previously Presented): The method of claim 1, wherein the step (c) comprises increasing the threshold value until the pattern quantizing value changes.

REMARKS

Claims 1-11 are all the claims pending in the application.

Applicants thank the Examiner for the telephone interview conducted on March 24, 2005, and the facsimile copy of the Examiner's Interview Summary Record (PTO-413).

During the interview, the following was discussed:

1. Brief description of exhibits or demonstration: none
2. Identification of claims discussed: claim 1.
3. Identification of art discussed: Nakagawa reference and Katsuyama reference
4. Identification of principal proposed amendments: See Amendment of July 21, 2004
5. Brief Identification of principal arguments: Recitation of "while" in the claims and in the specification are supported in the original disclosure.
6. Indication of other pertinent matters discussed: Applicants argued that the recitation of "while" in the claims and in the specification is supported in the original disclosure.
7. Results of Interview: Agreement to consider replacing "while" with "if" in claim 1.

It is respectfully submitted that the above statement of substance of interview complies with the requirements of 37 C.F.R. §§1.2 and 1.133 and MPEP §713.04.

Claims 1, 5, 9, and 10 and the Specification have been amended to replace "while" with "if" as shown above.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the


AMENDMENT UNDER 37 C.F.R. § 1.114(c)
U.S. Appln. No.: 09/822,838

Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

SUGHRUE MION, PLLC
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Seok-Won Stuart Lee*
*Granted limited recognition under
37 C.F.R. § 11.9(b), as shown in a copy of
the same filed on February 3, 2005, at the
U.S.P.T.O.

WASHINGTON OFFICE

23373

CUSTOMER NUMBER

Date: April 4, 2005